

Gate Leakage vs. T_{inv} as a Function of Base Oxide Thickness and RPN Time

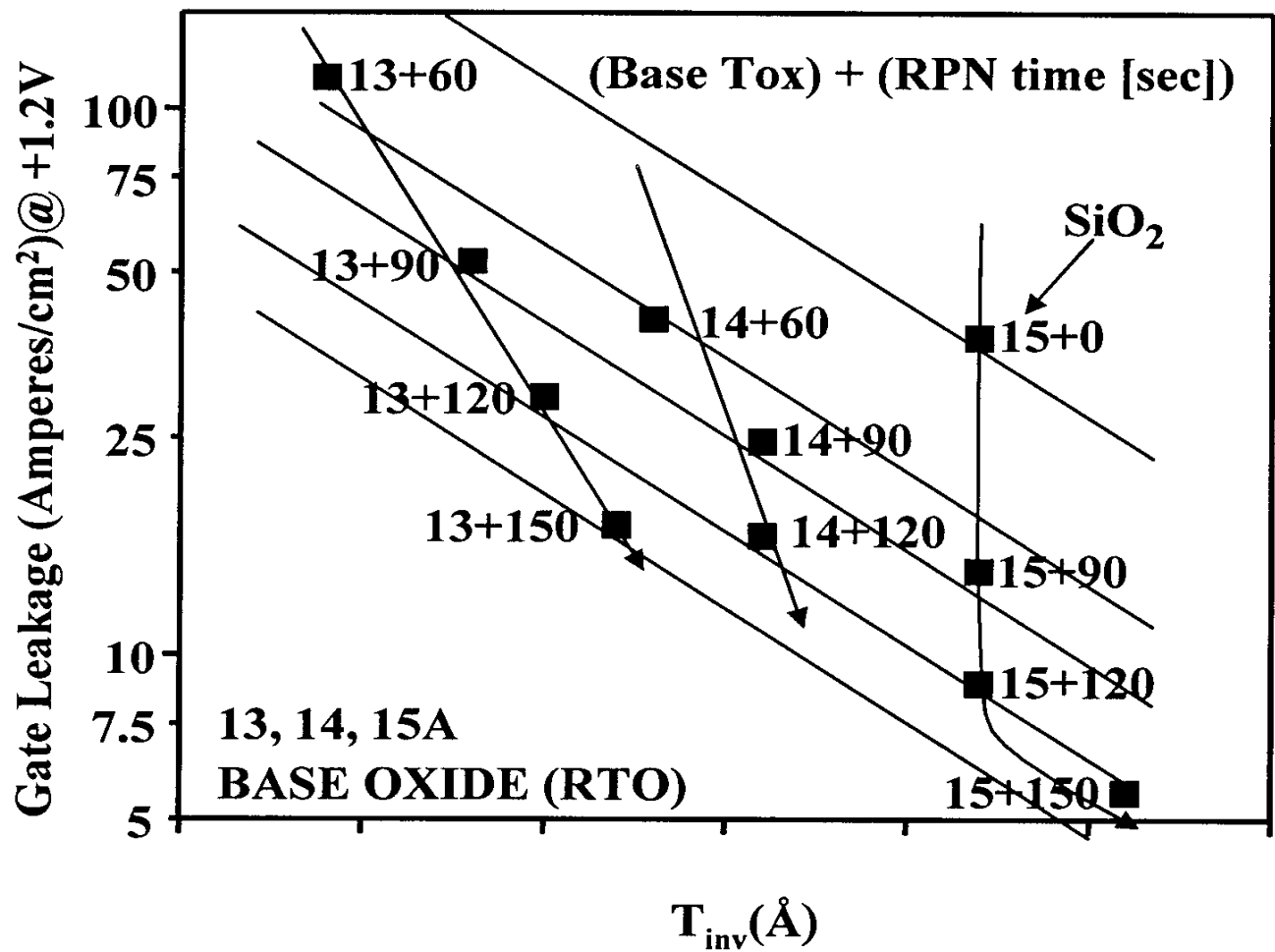


FIG. 1 PRIOR ART

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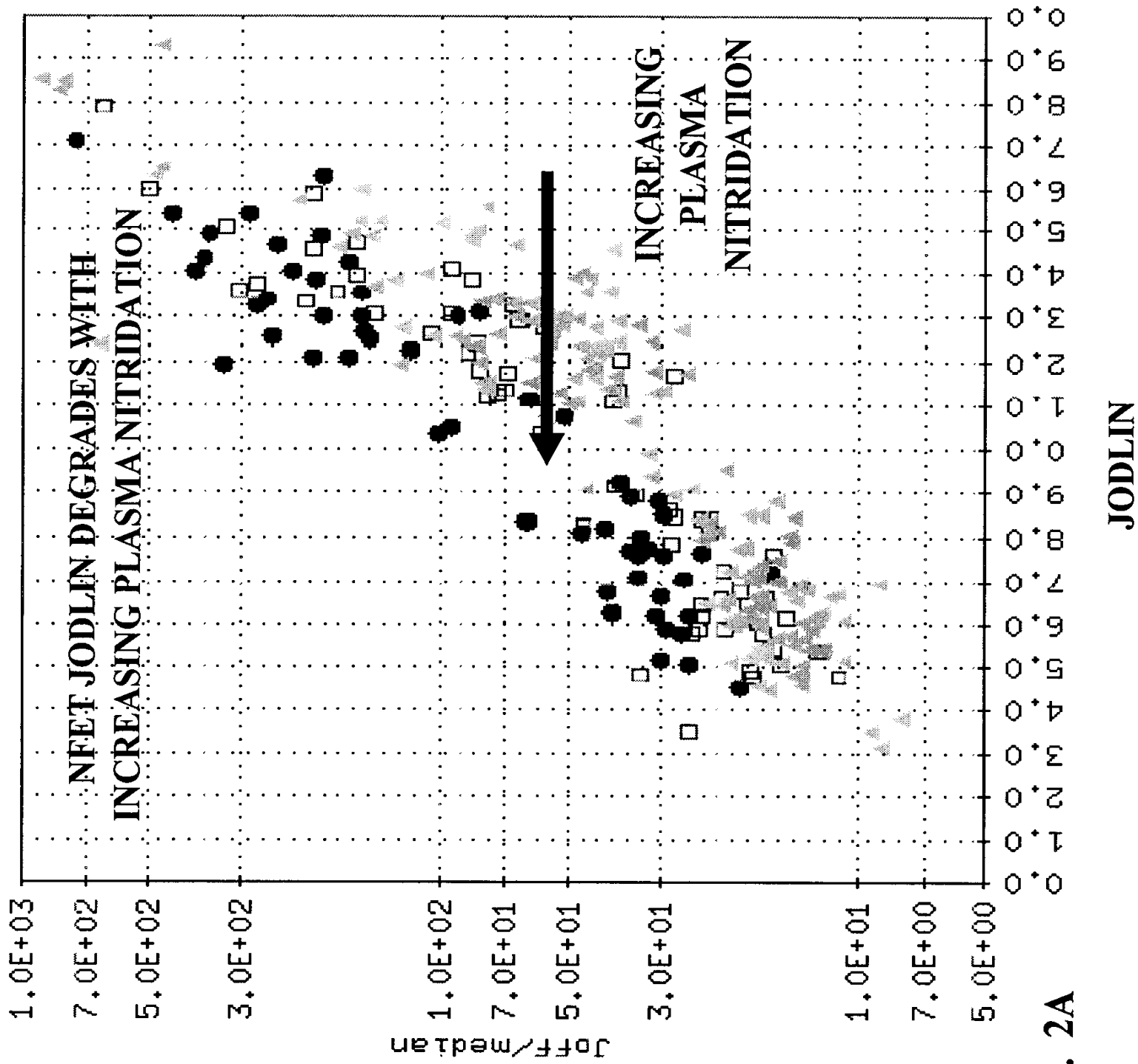


FIG. 2A

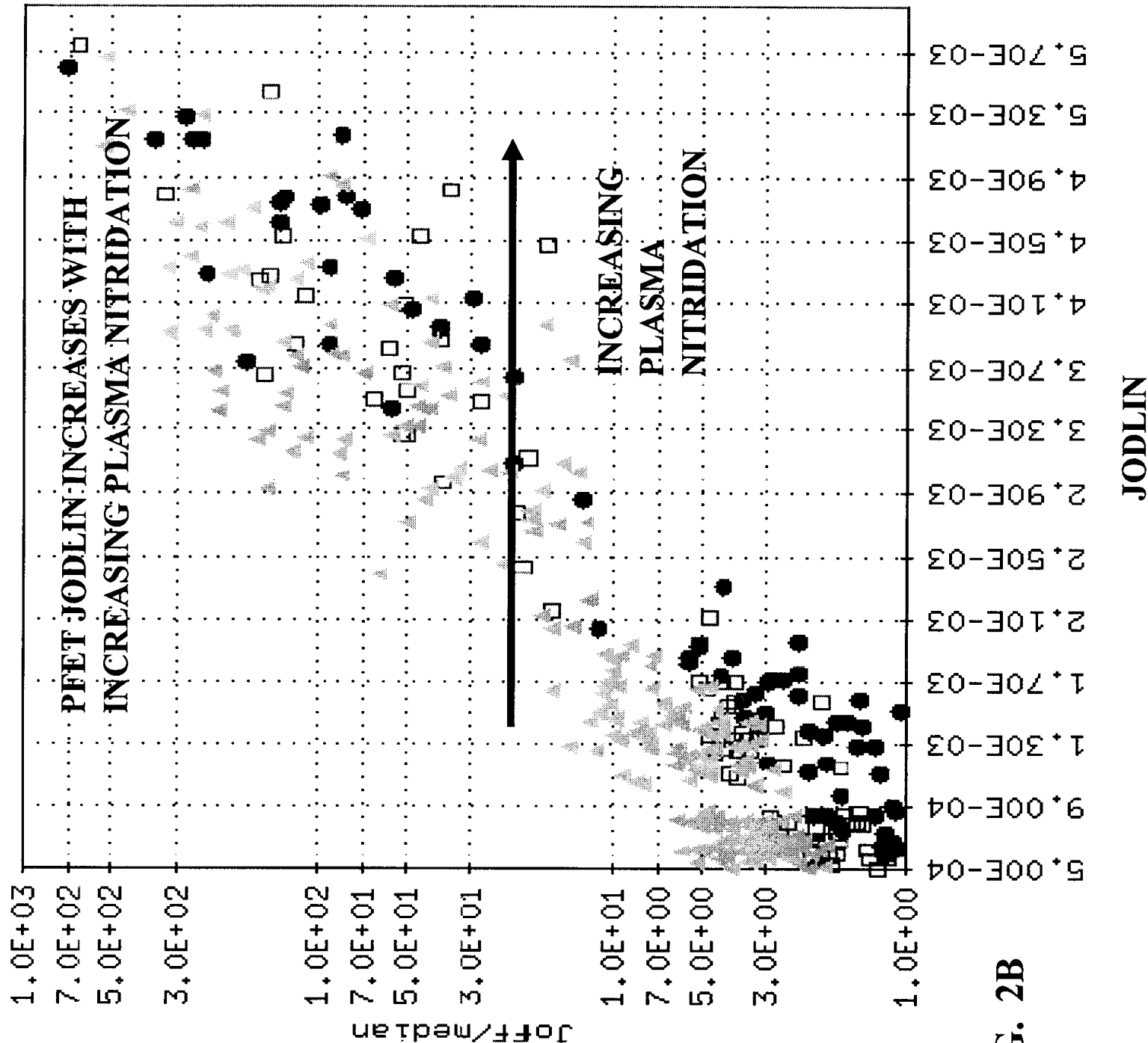
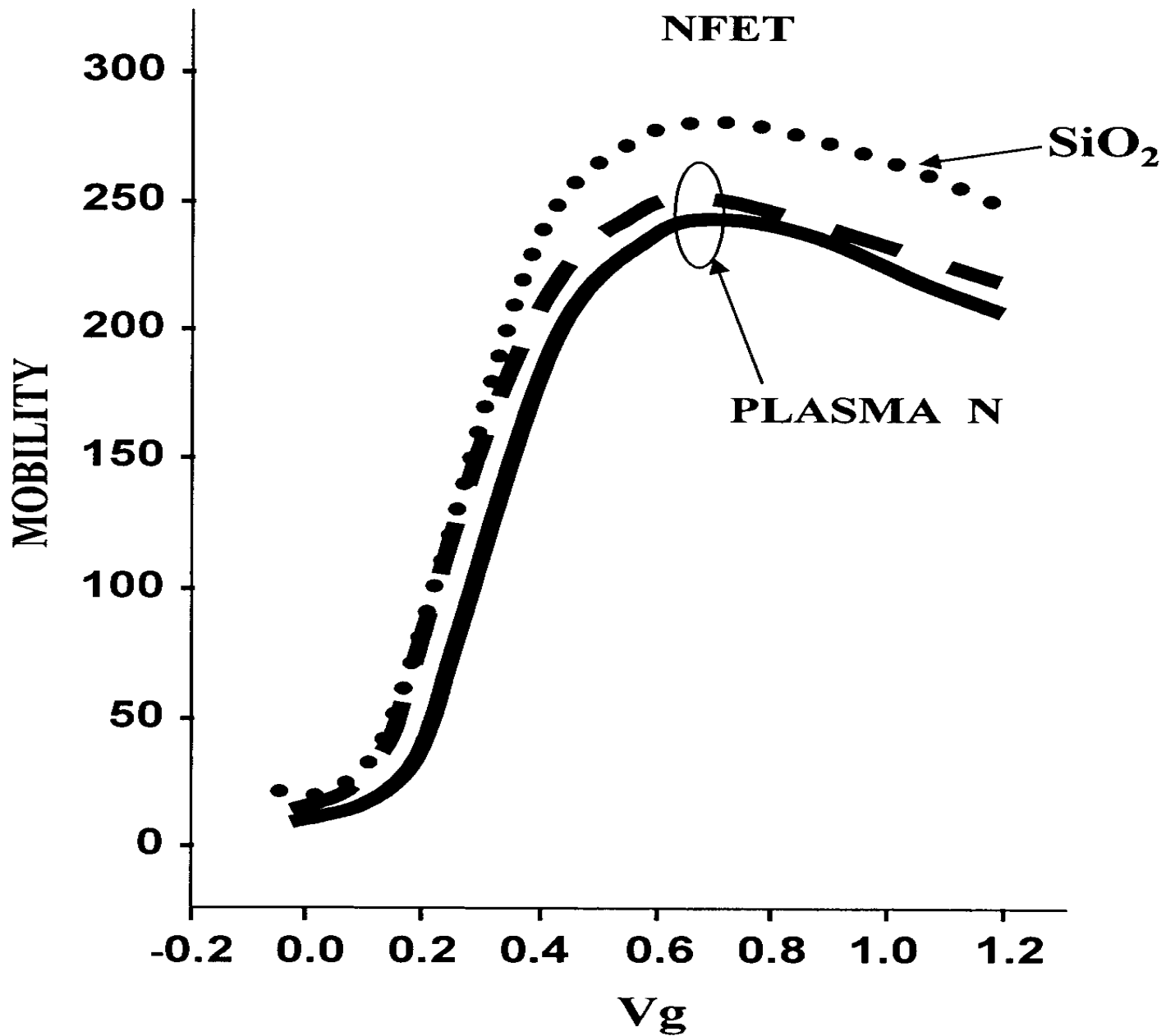


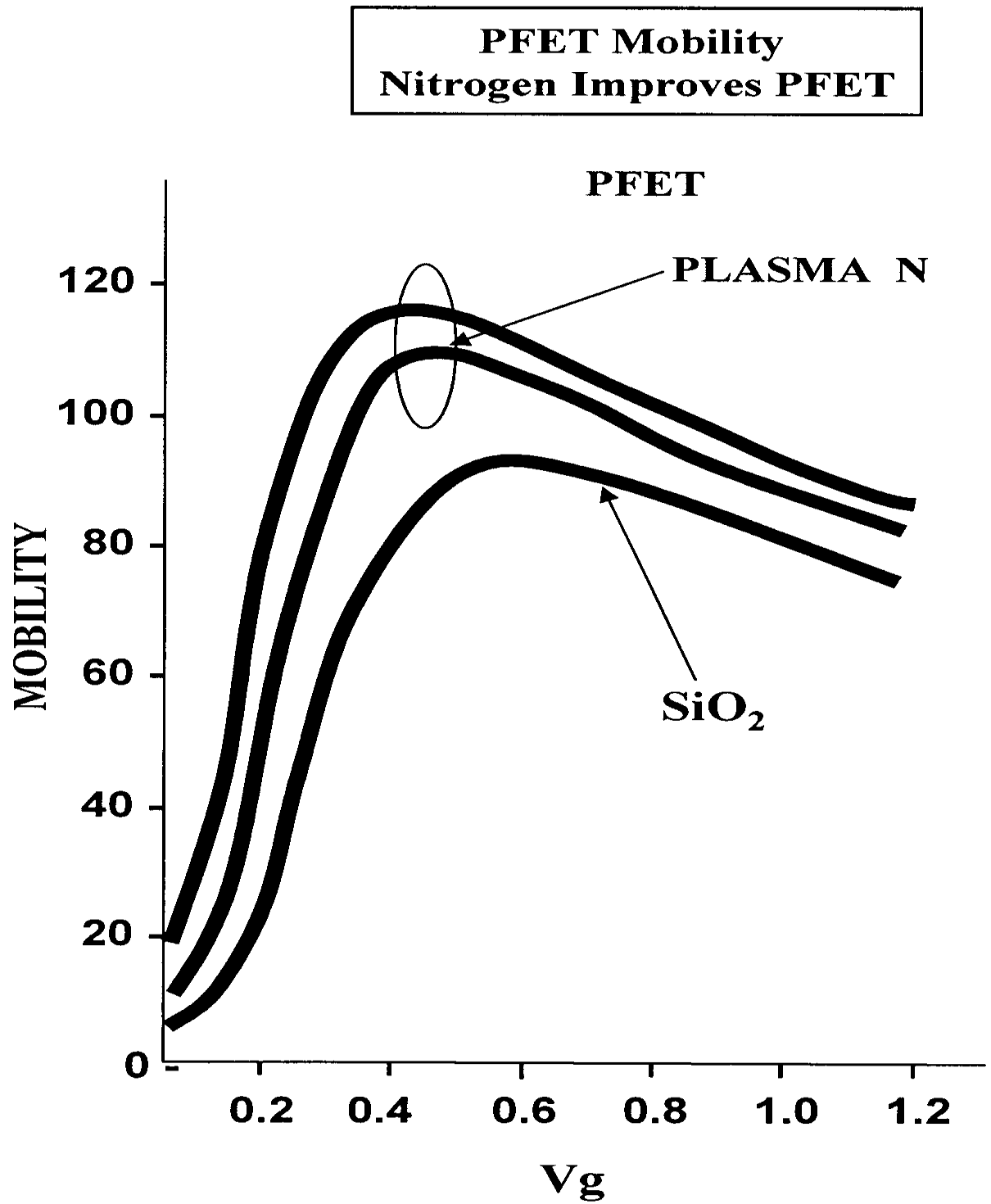
FIG. 2B

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**NFET Mobility
Nitrogen Degrades NFET**

**FIG. 3A**

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**FIG. 3B**

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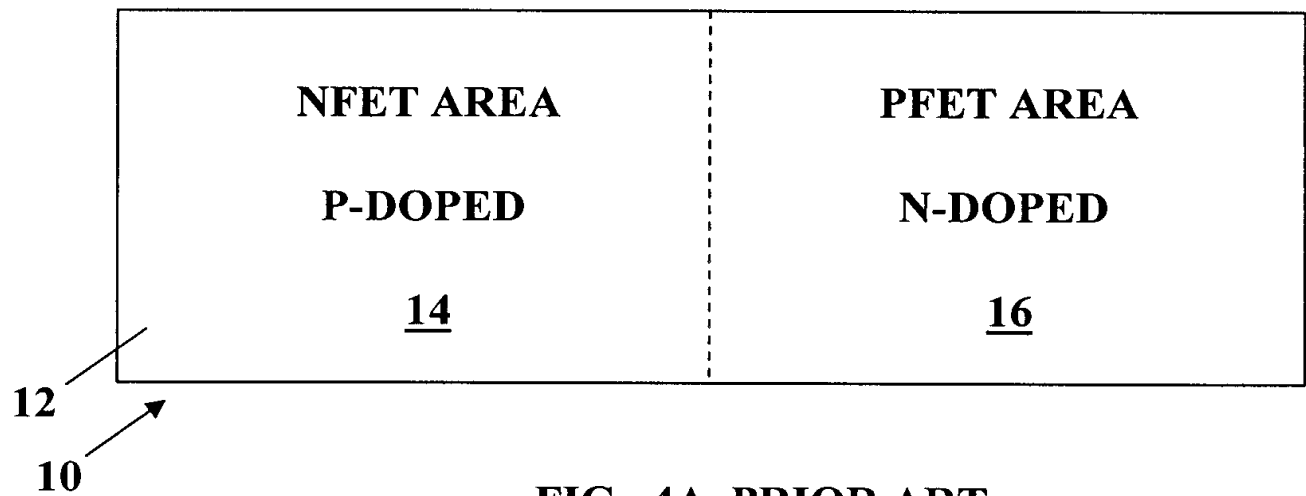


FIG. 4A PRIOR ART

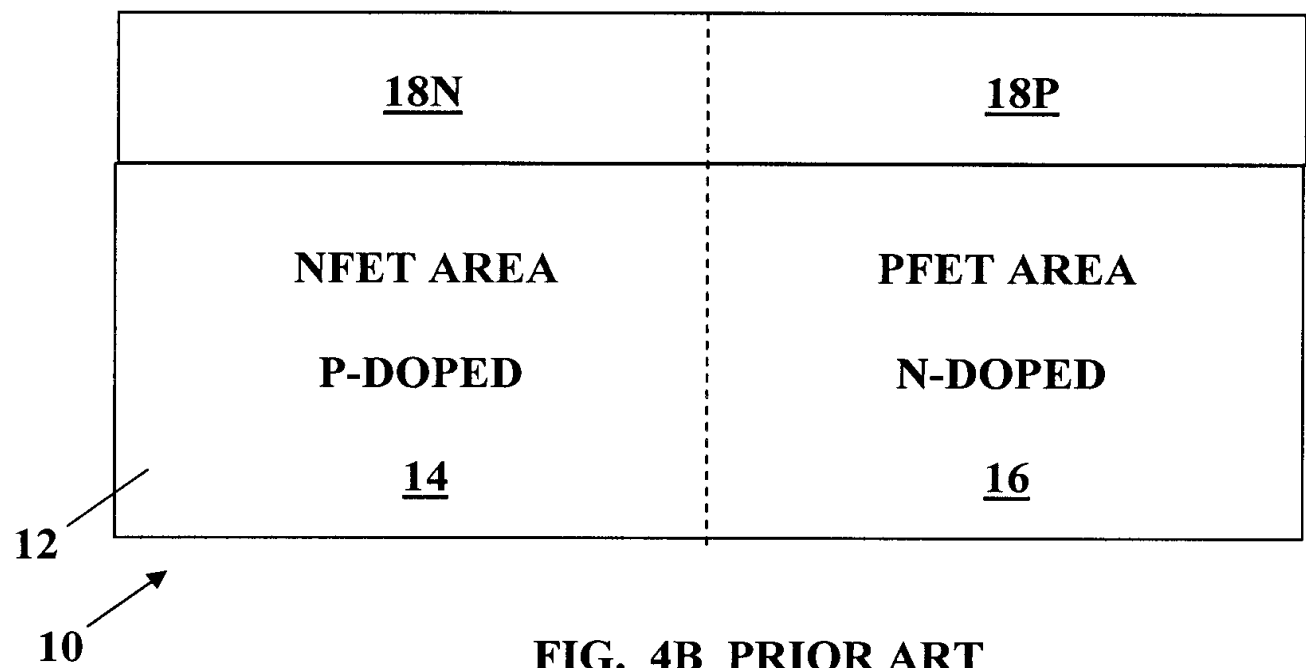
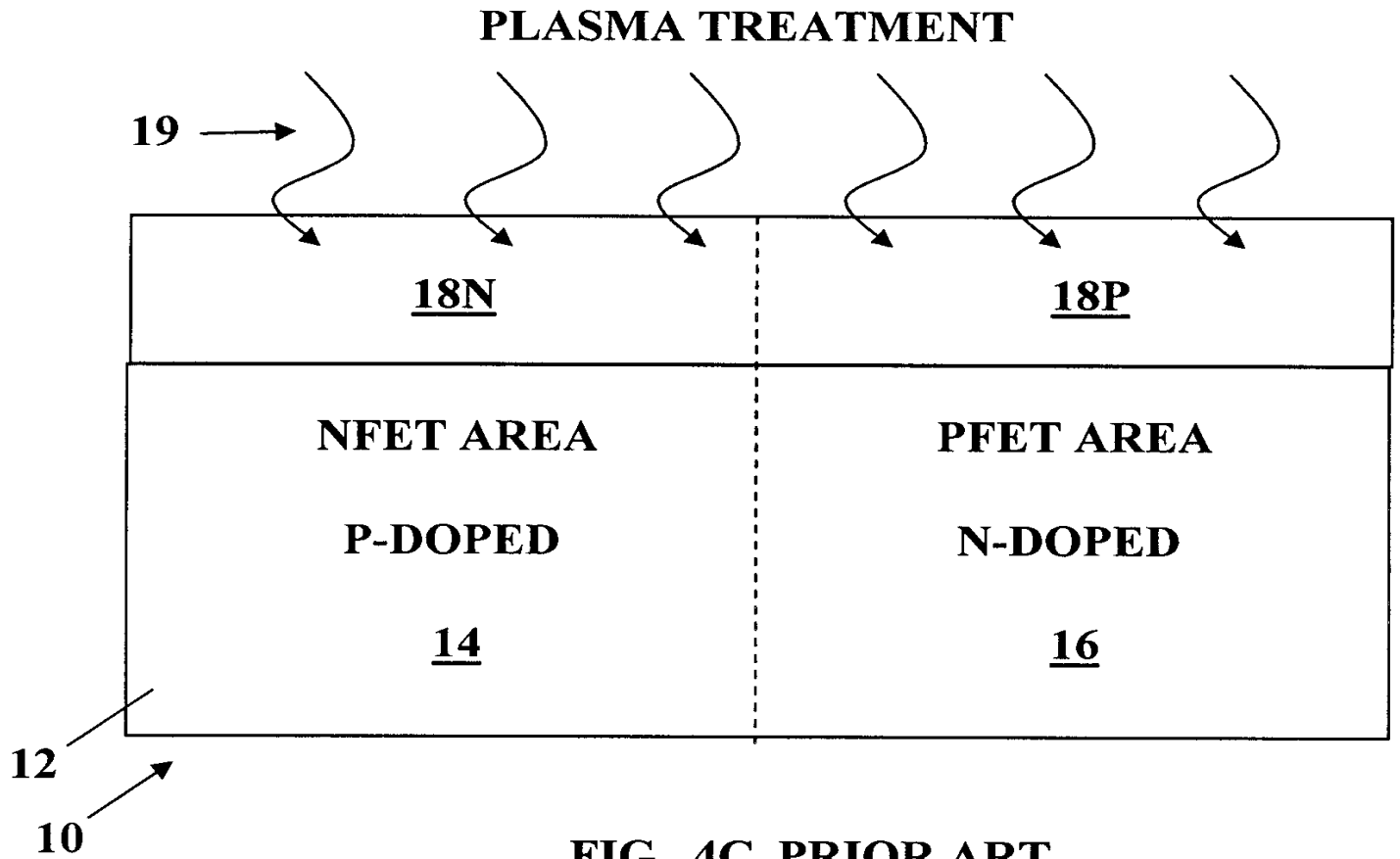
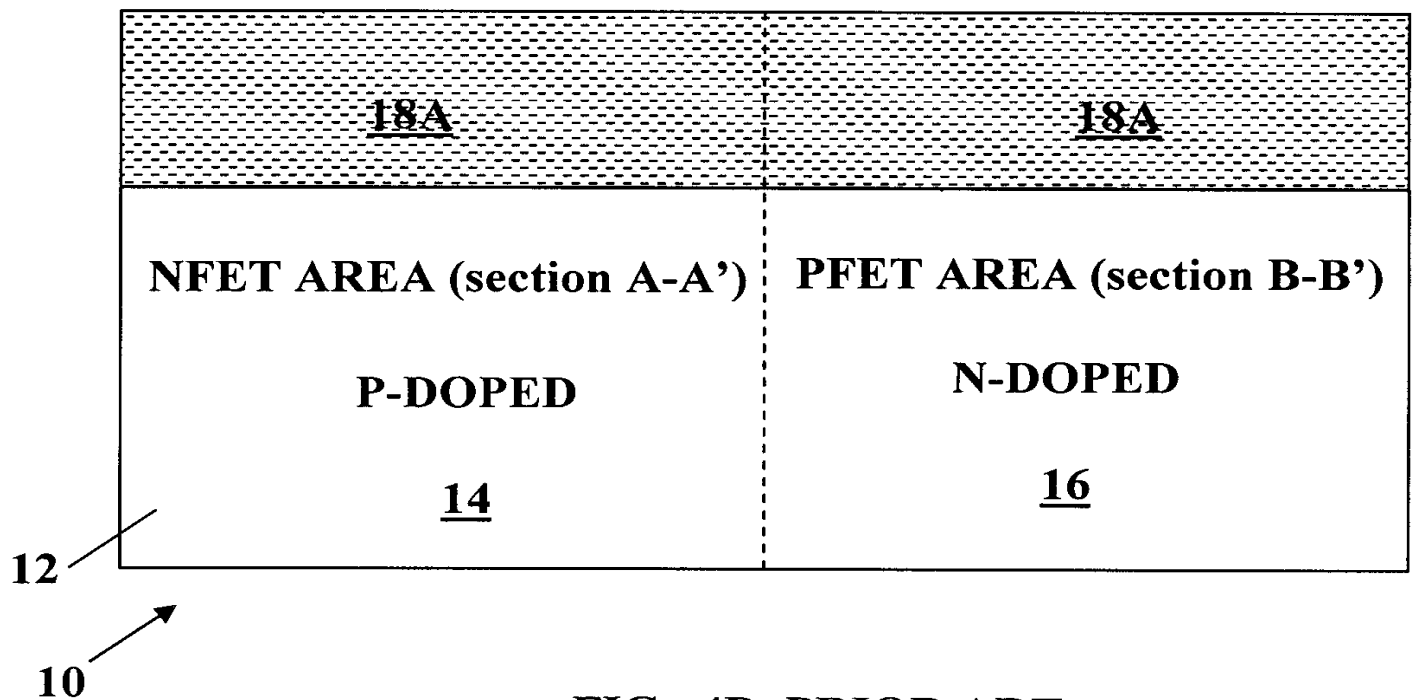


FIG. 4B PRIOR ART

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**FIG. 4C PRIOR ART****FIG. 4D PRIOR ART**

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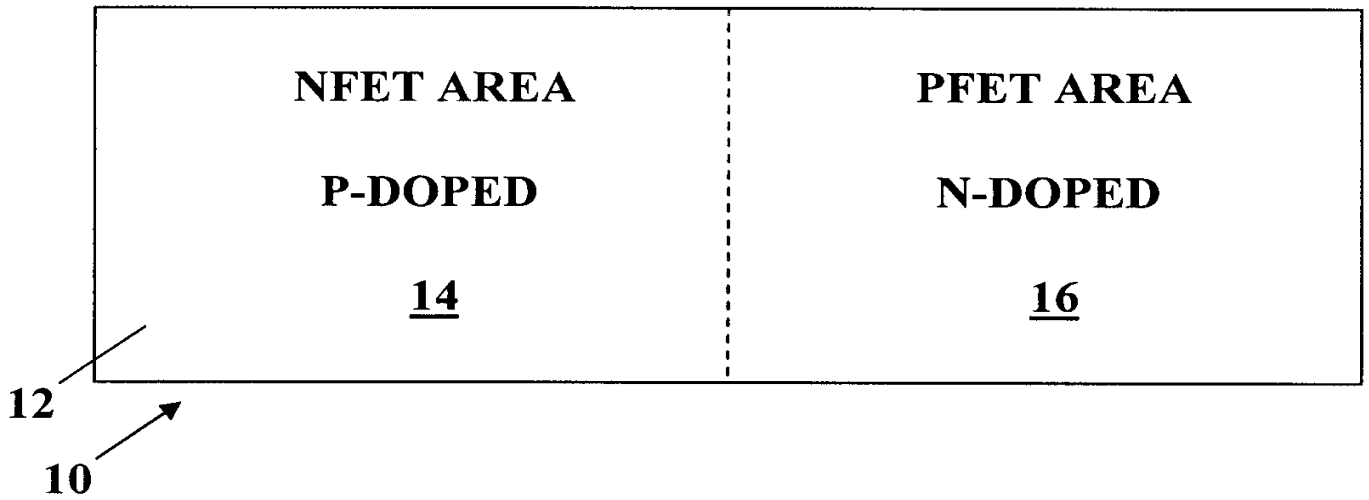


FIG. 5A

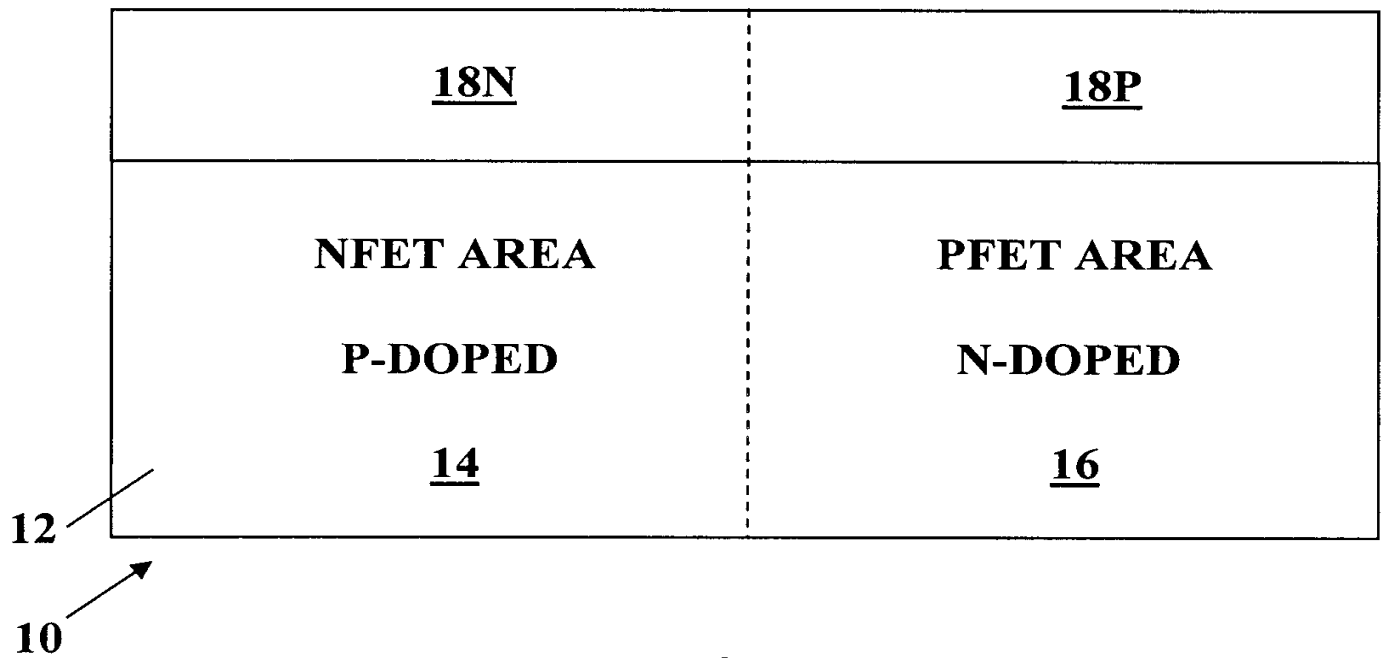
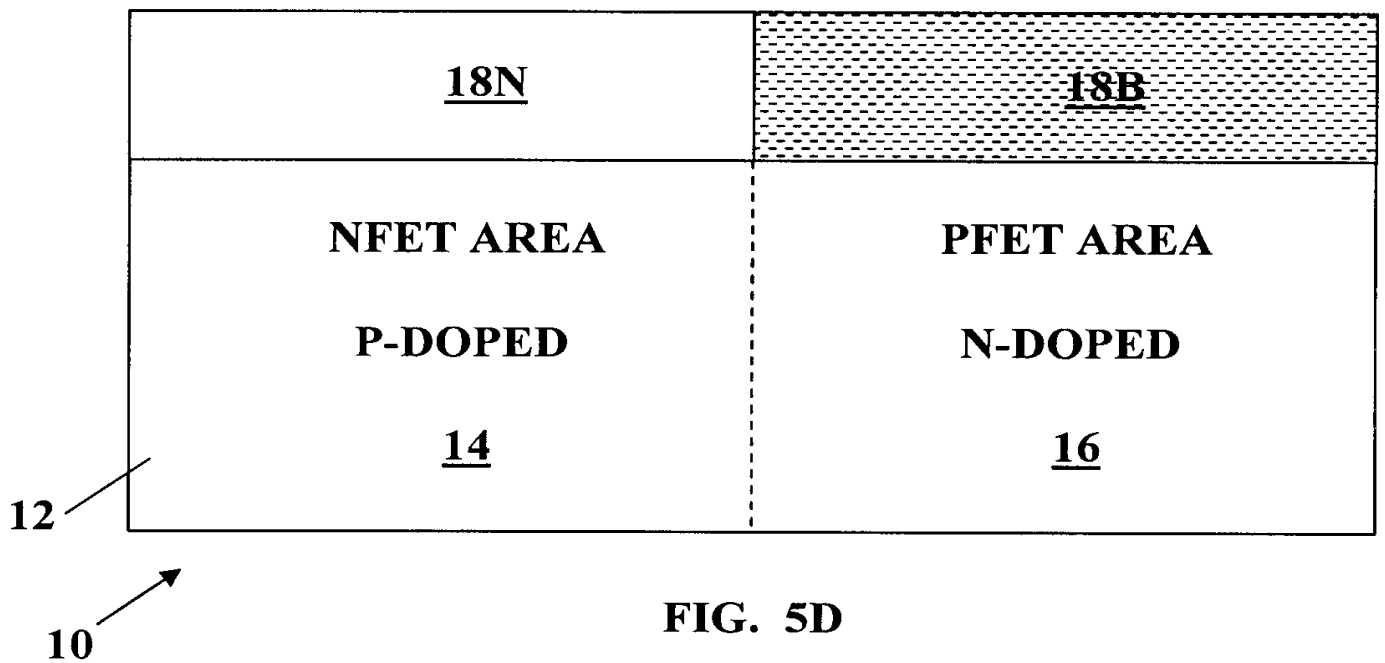
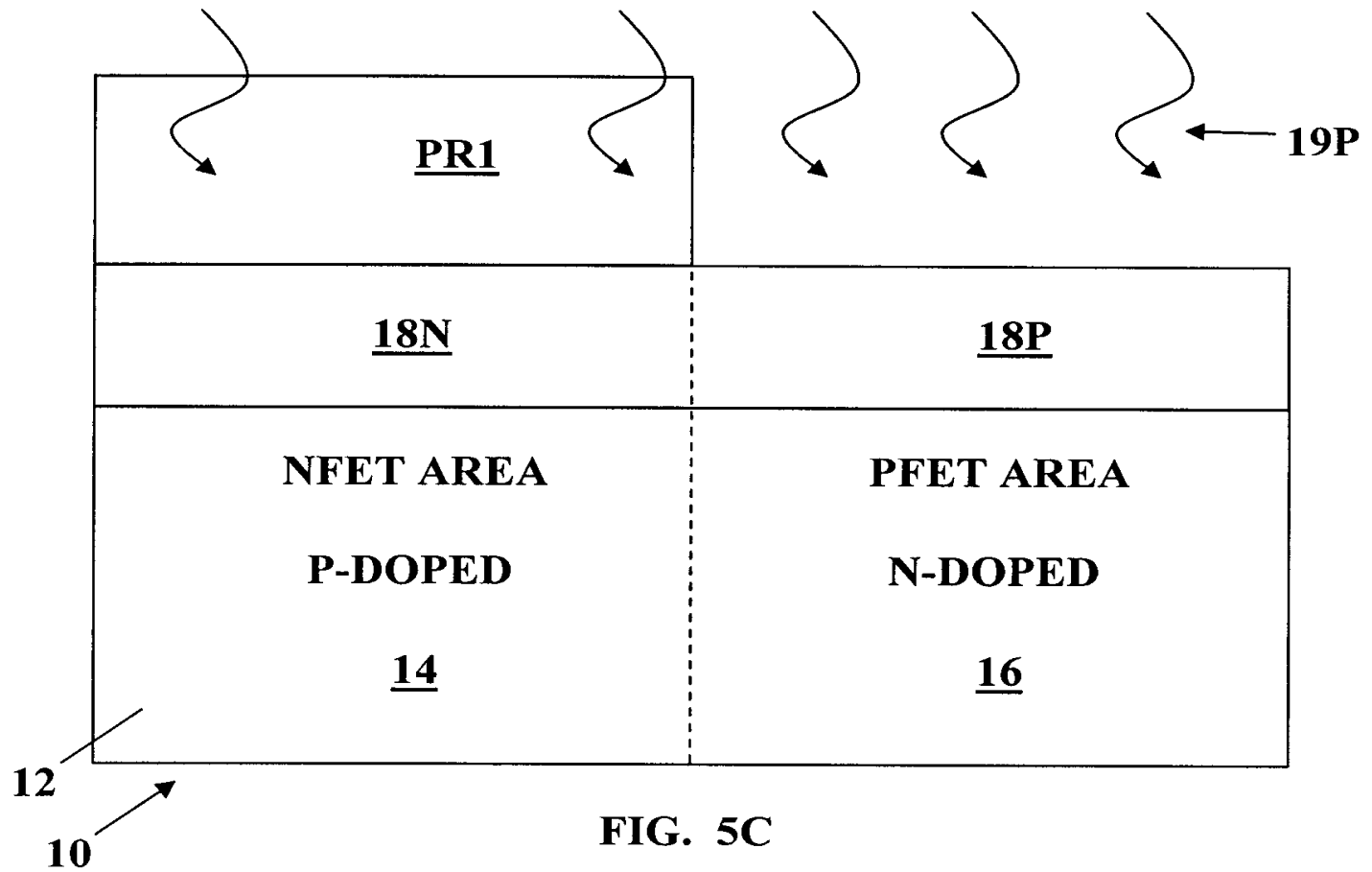
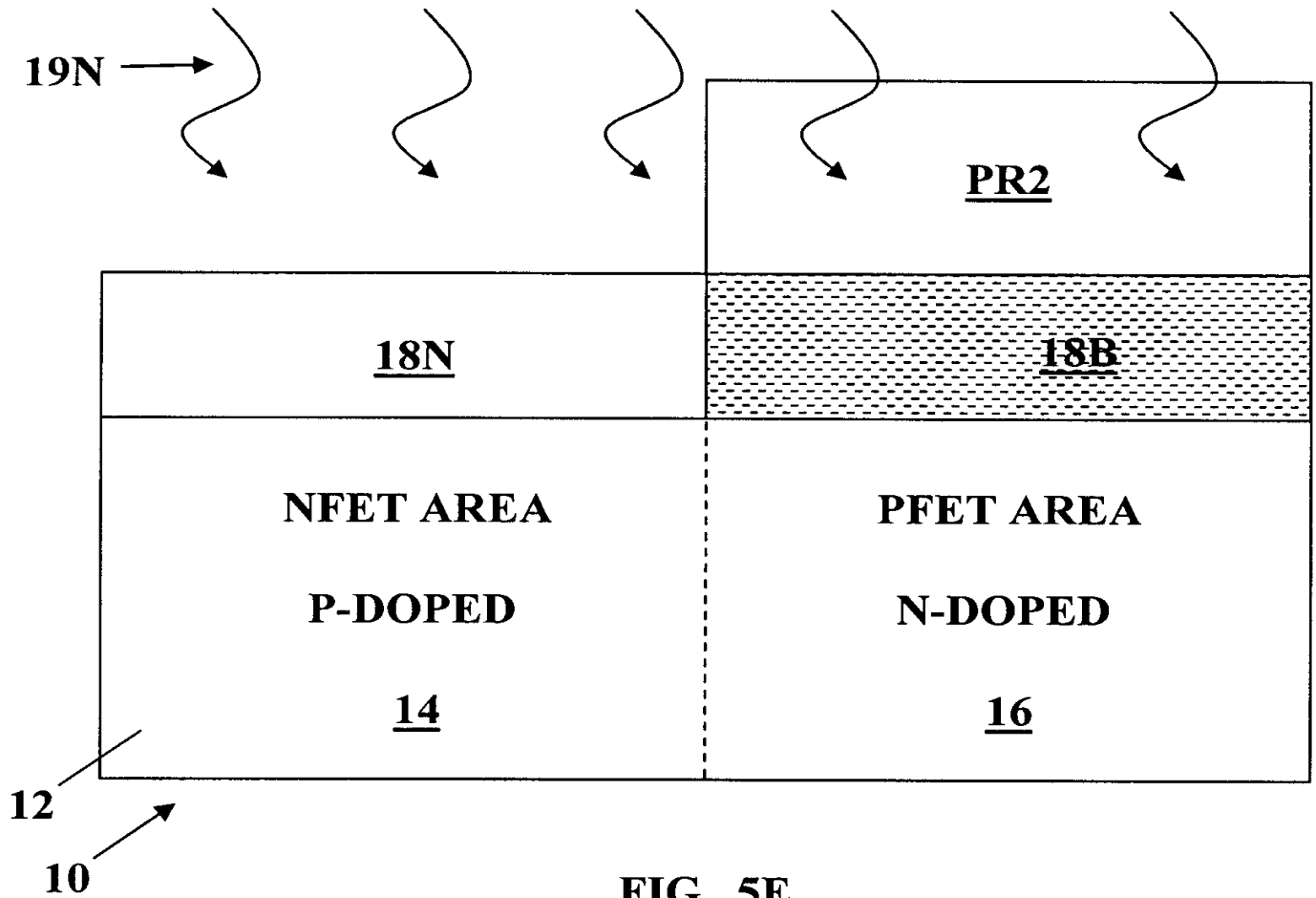
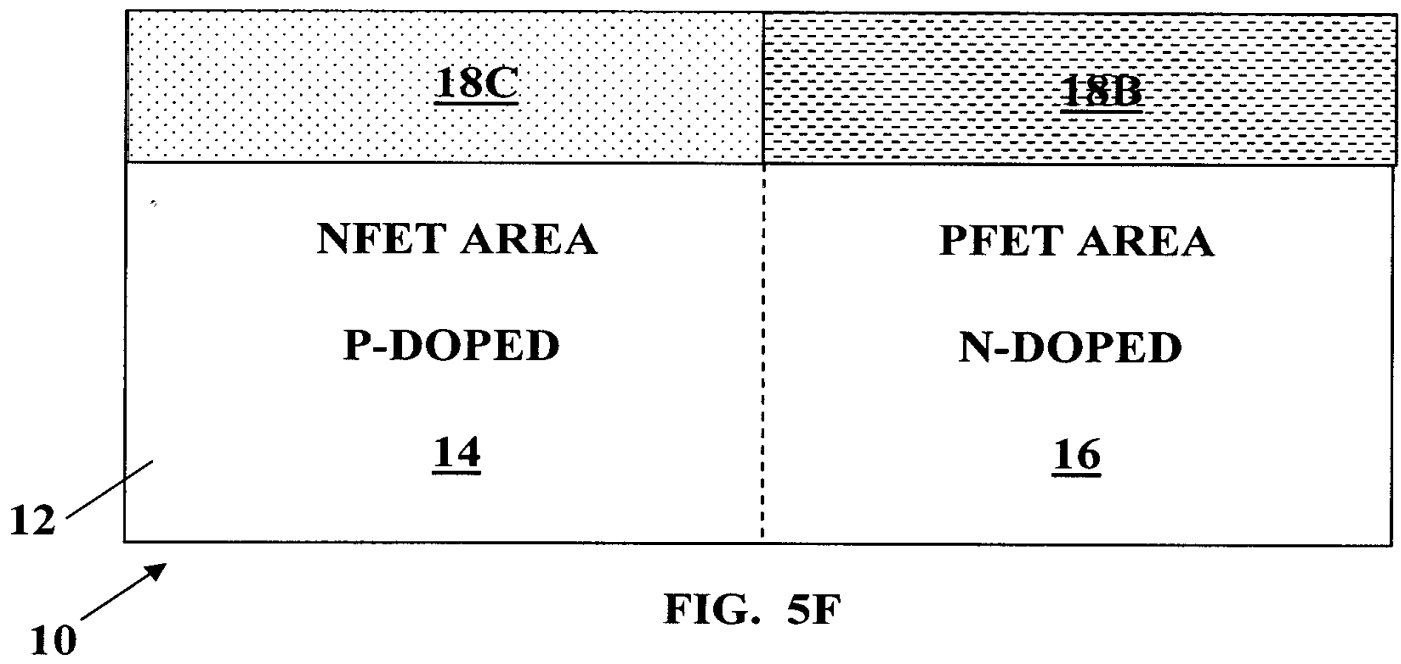


FIG. 5B

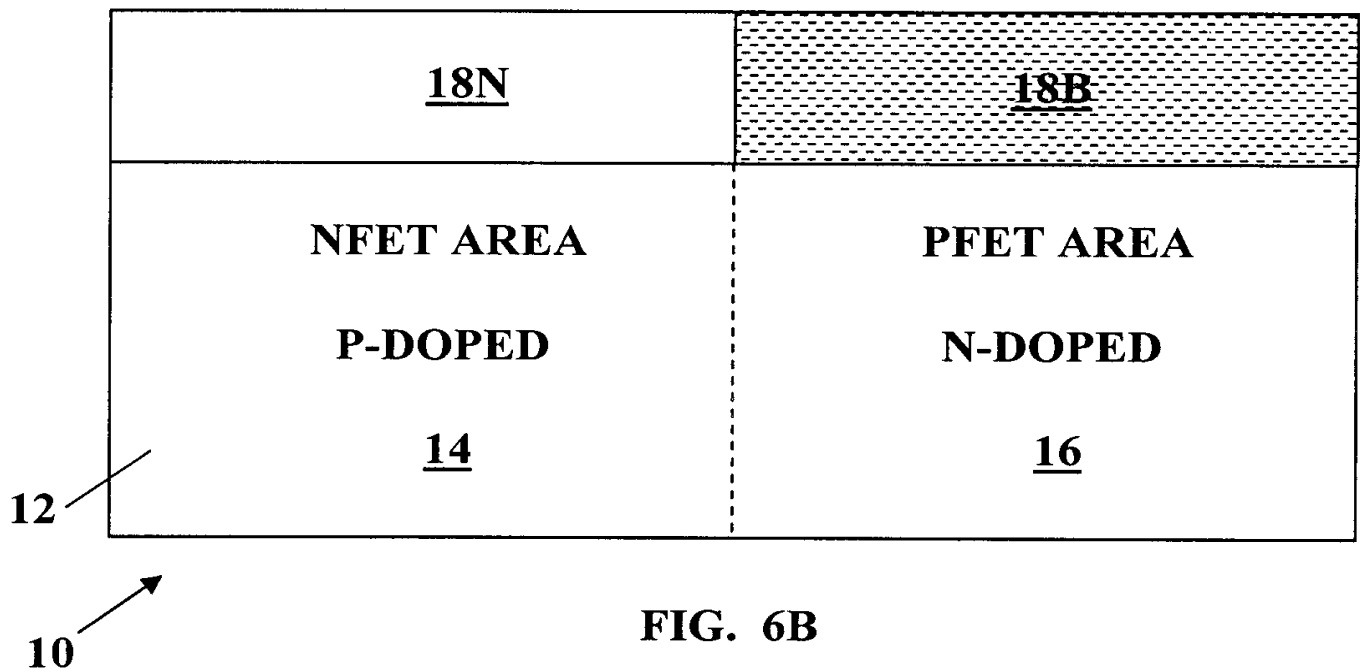
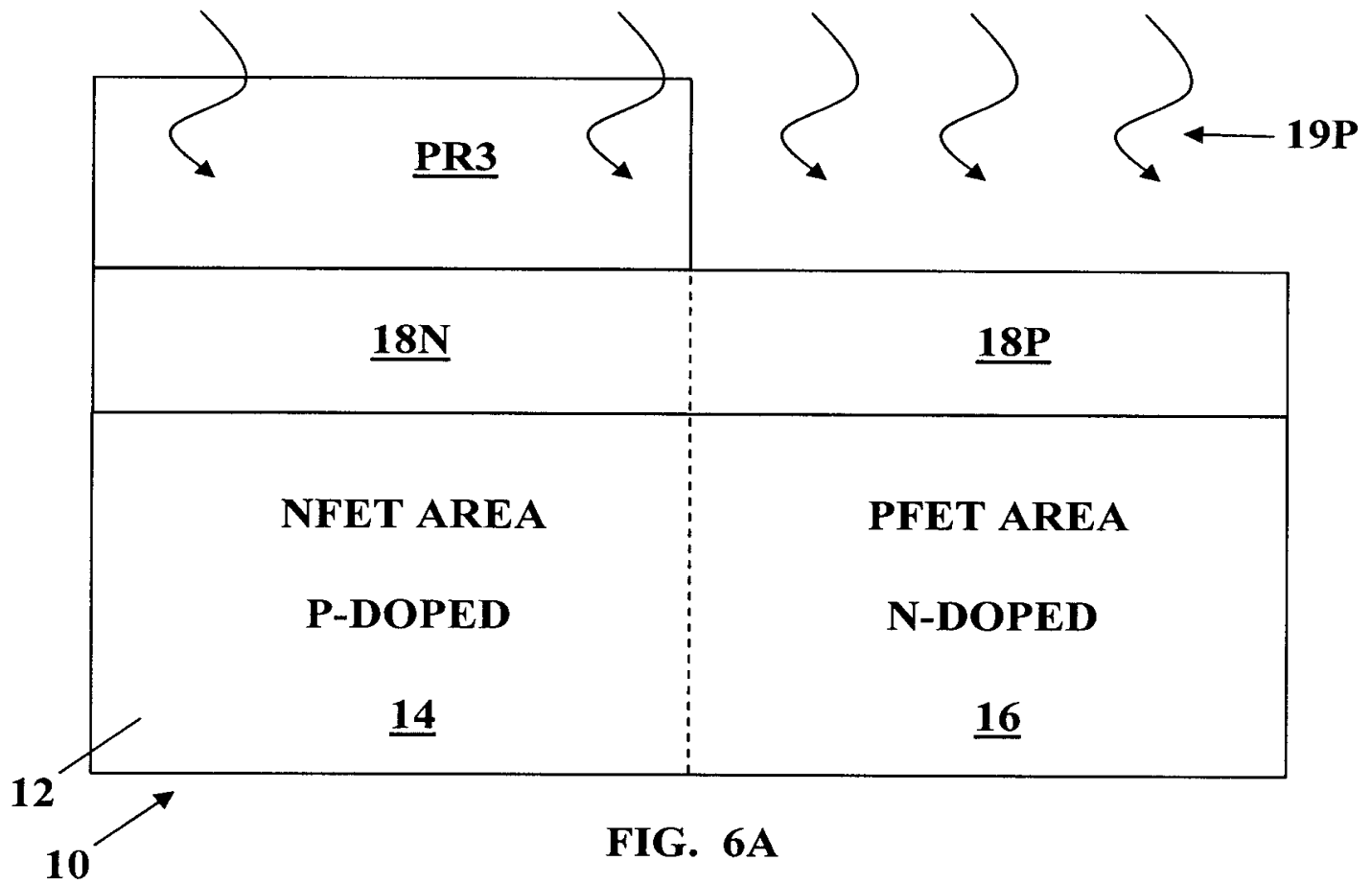
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PFET PLASMA TREATMENT

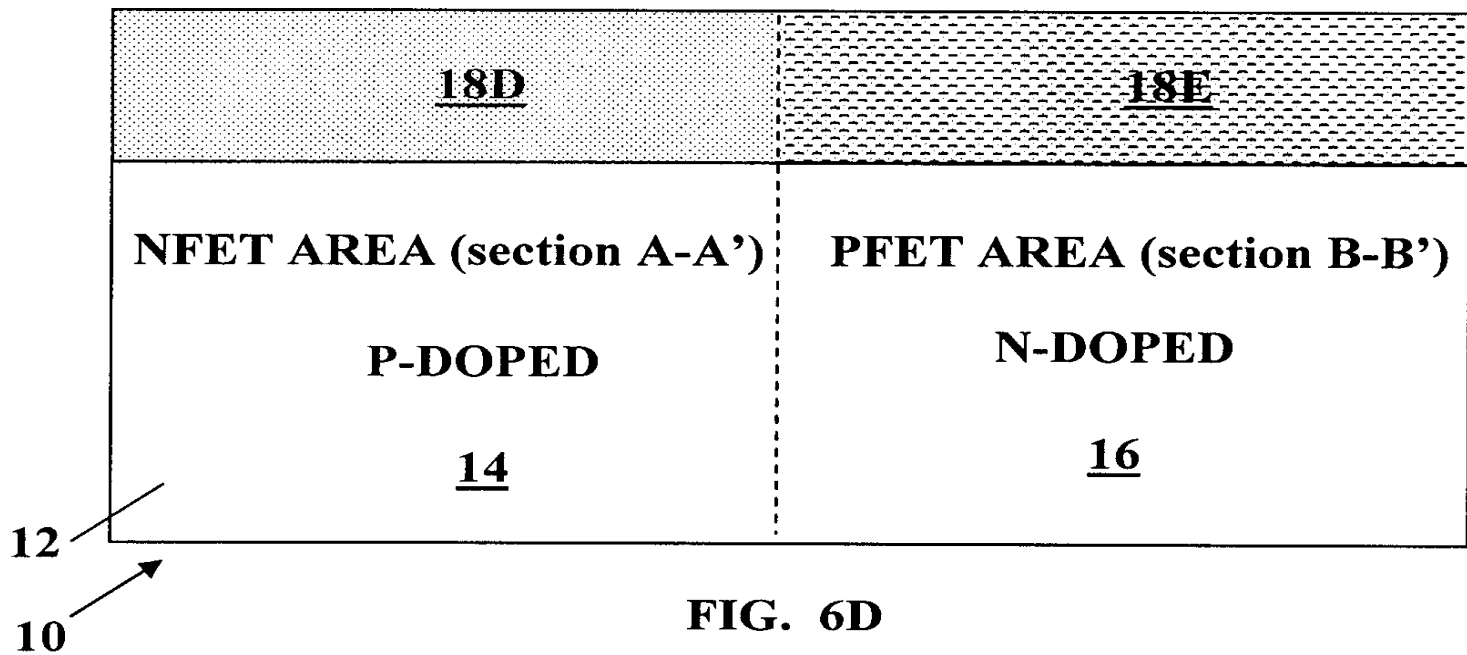
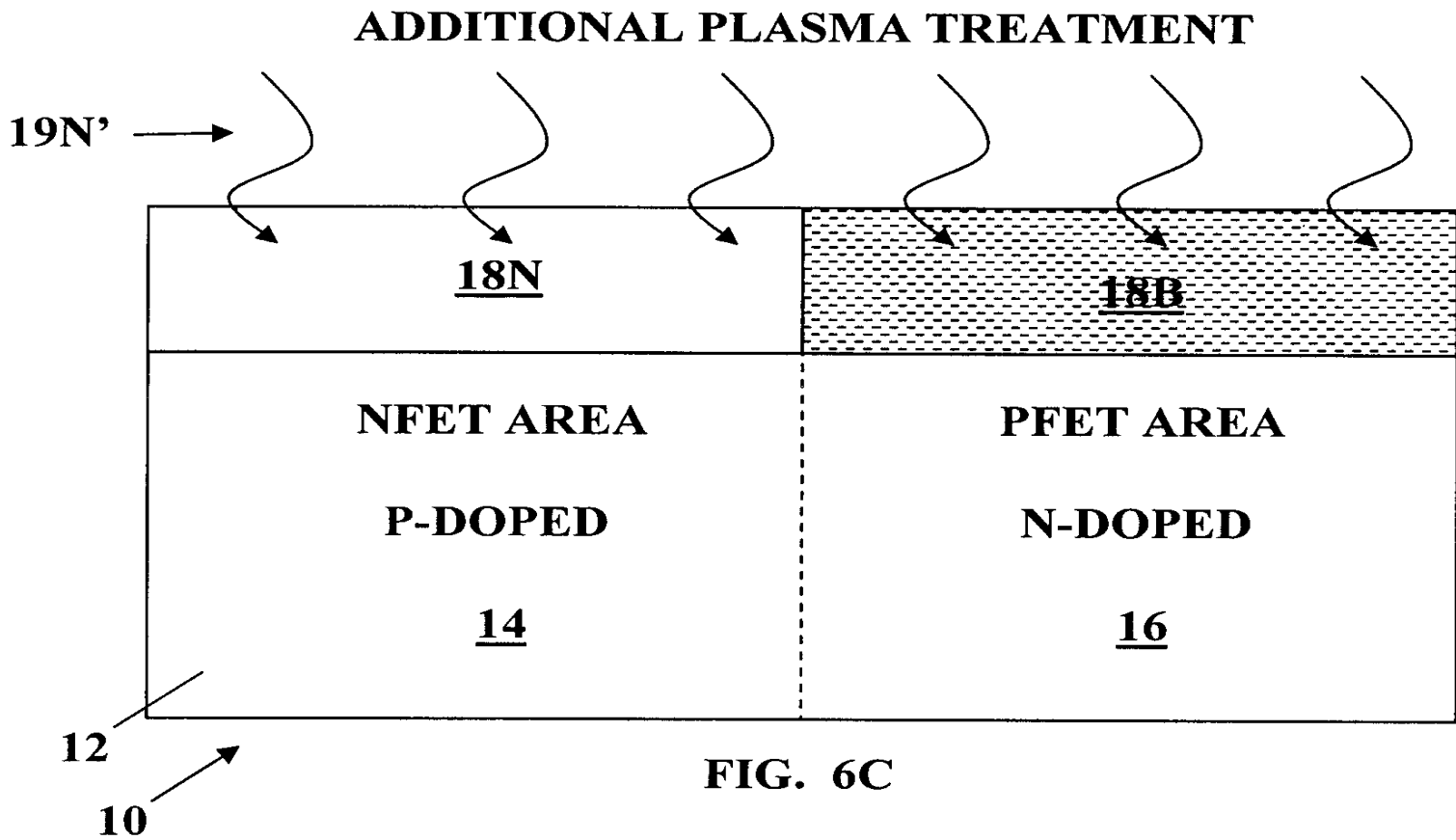
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NFET PLASMA TREATMENT**FIG. 5E****FIG. 5F**

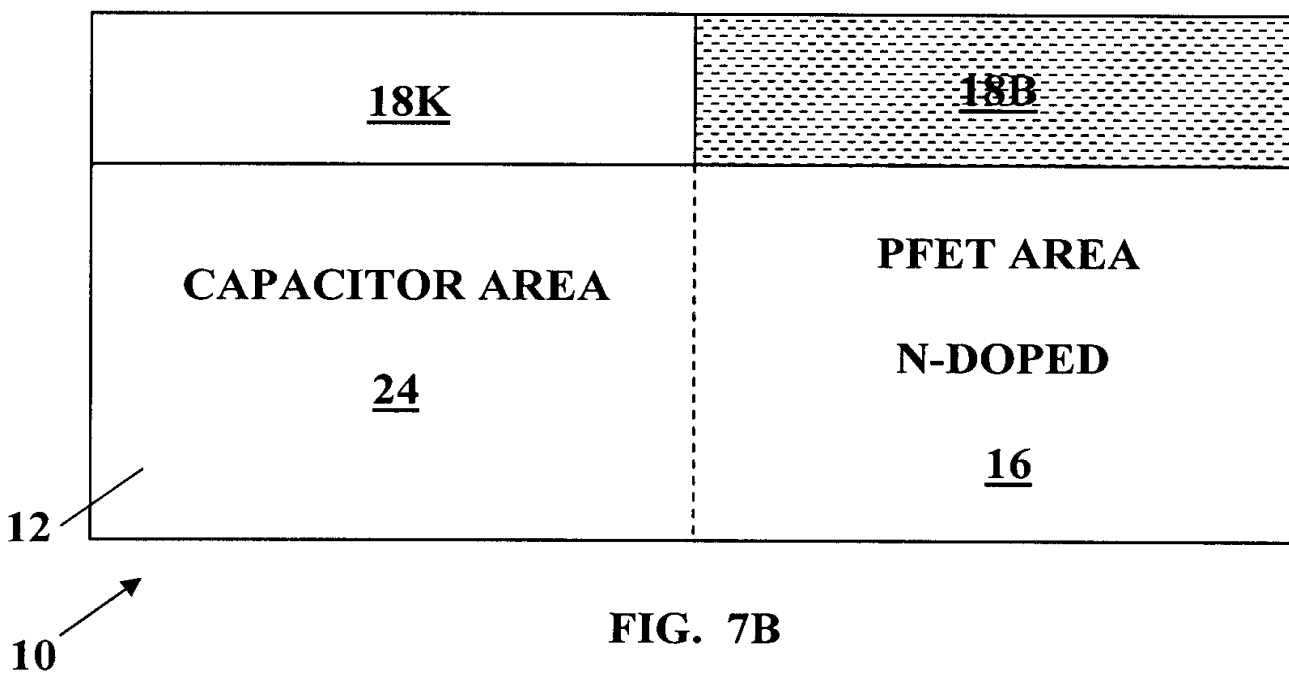
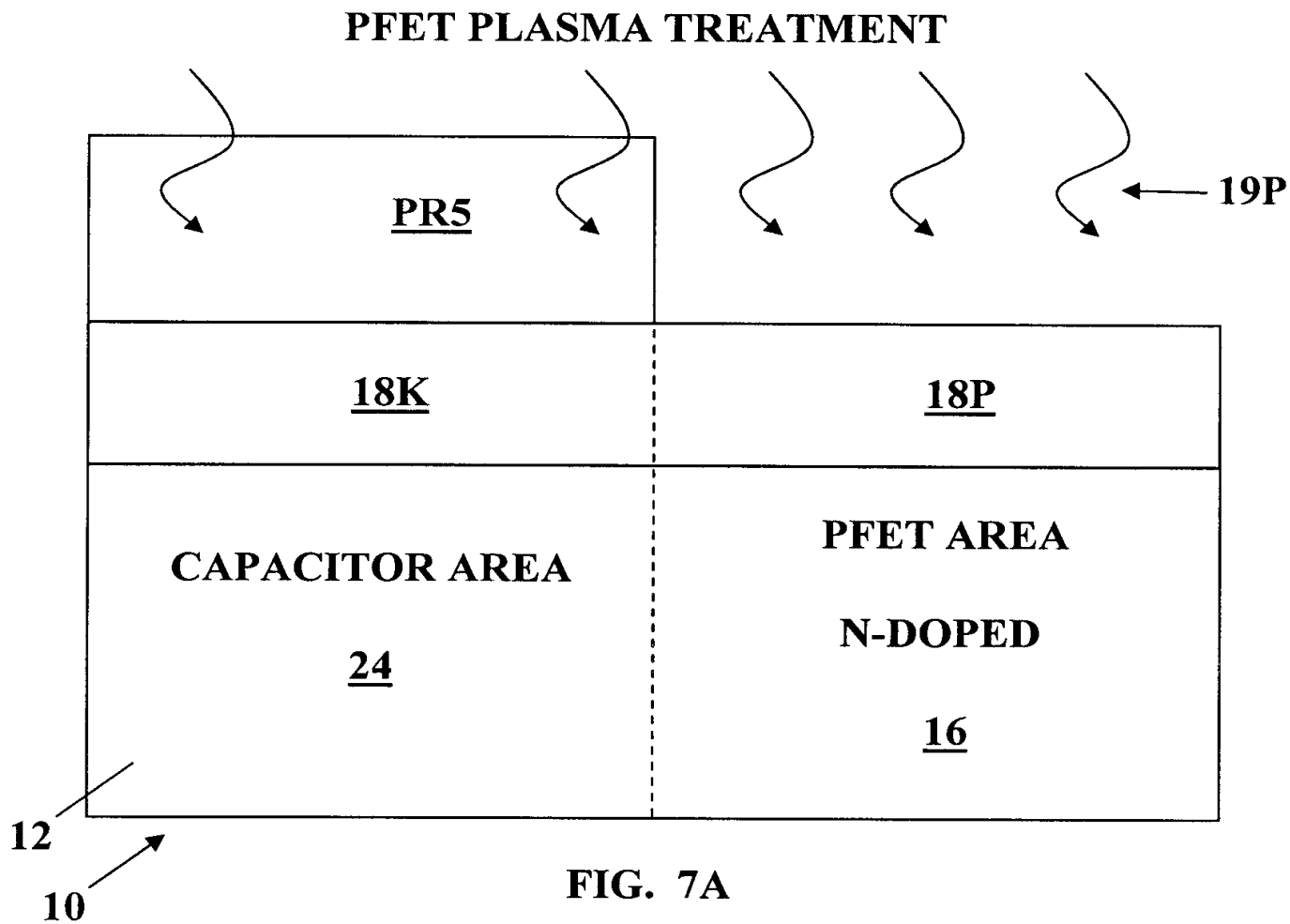
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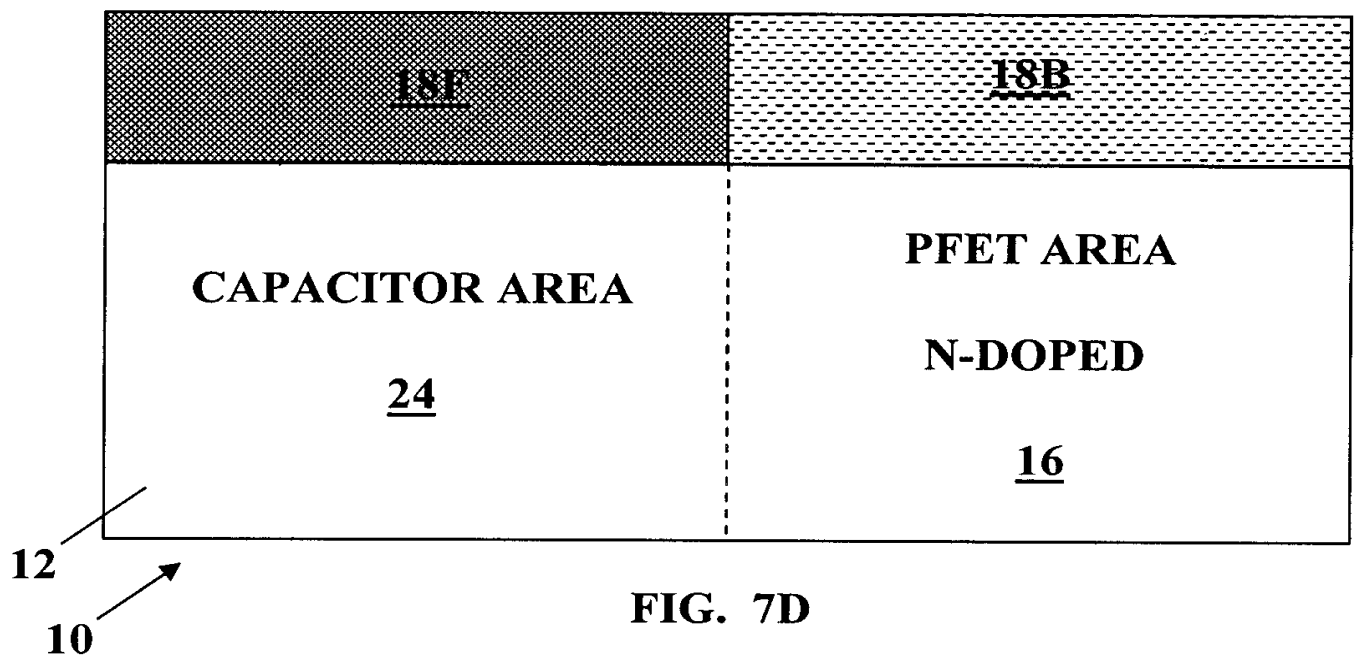
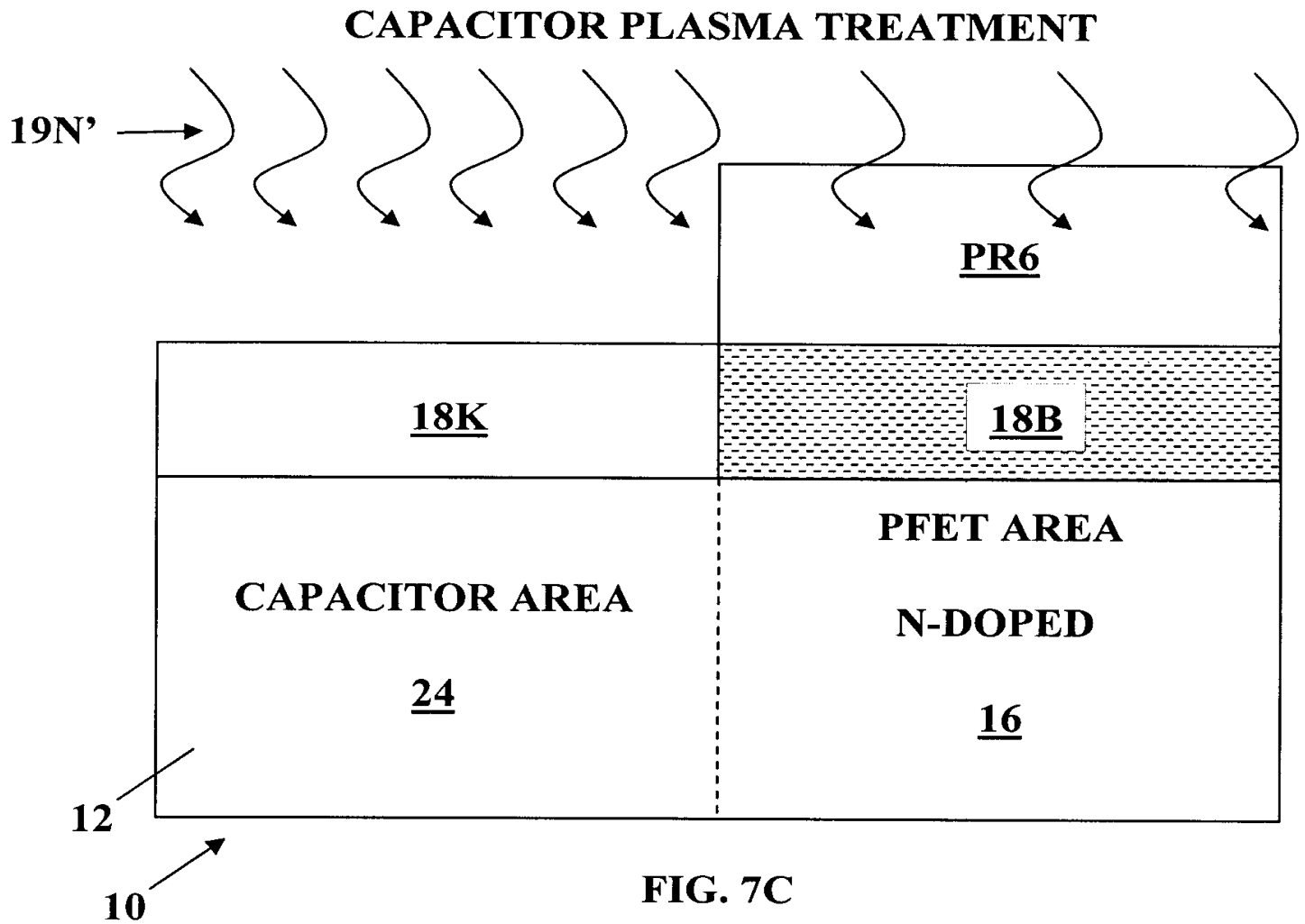
PFET PLASMA TREATMENT

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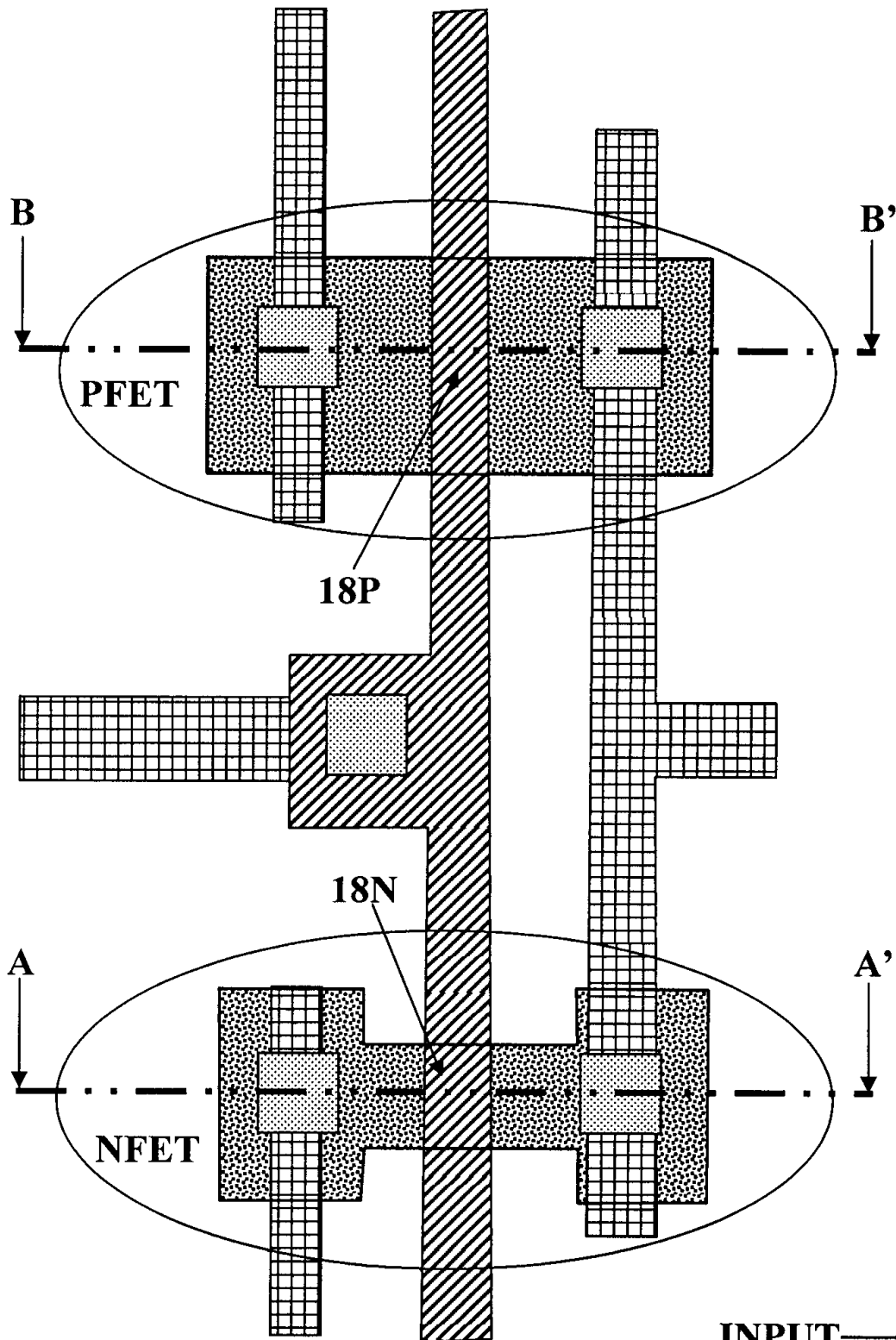


FIG. 8A

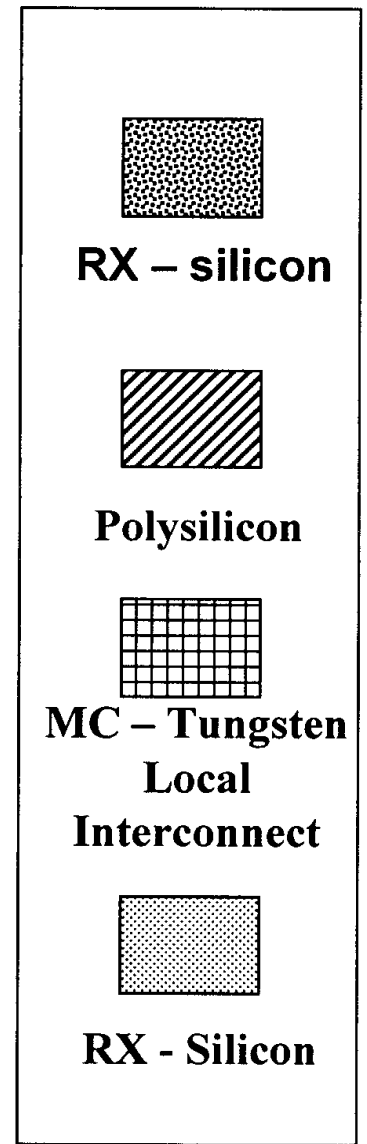


FIG. 8B

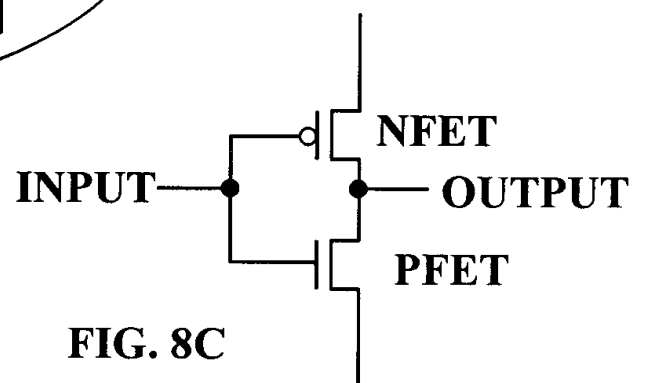
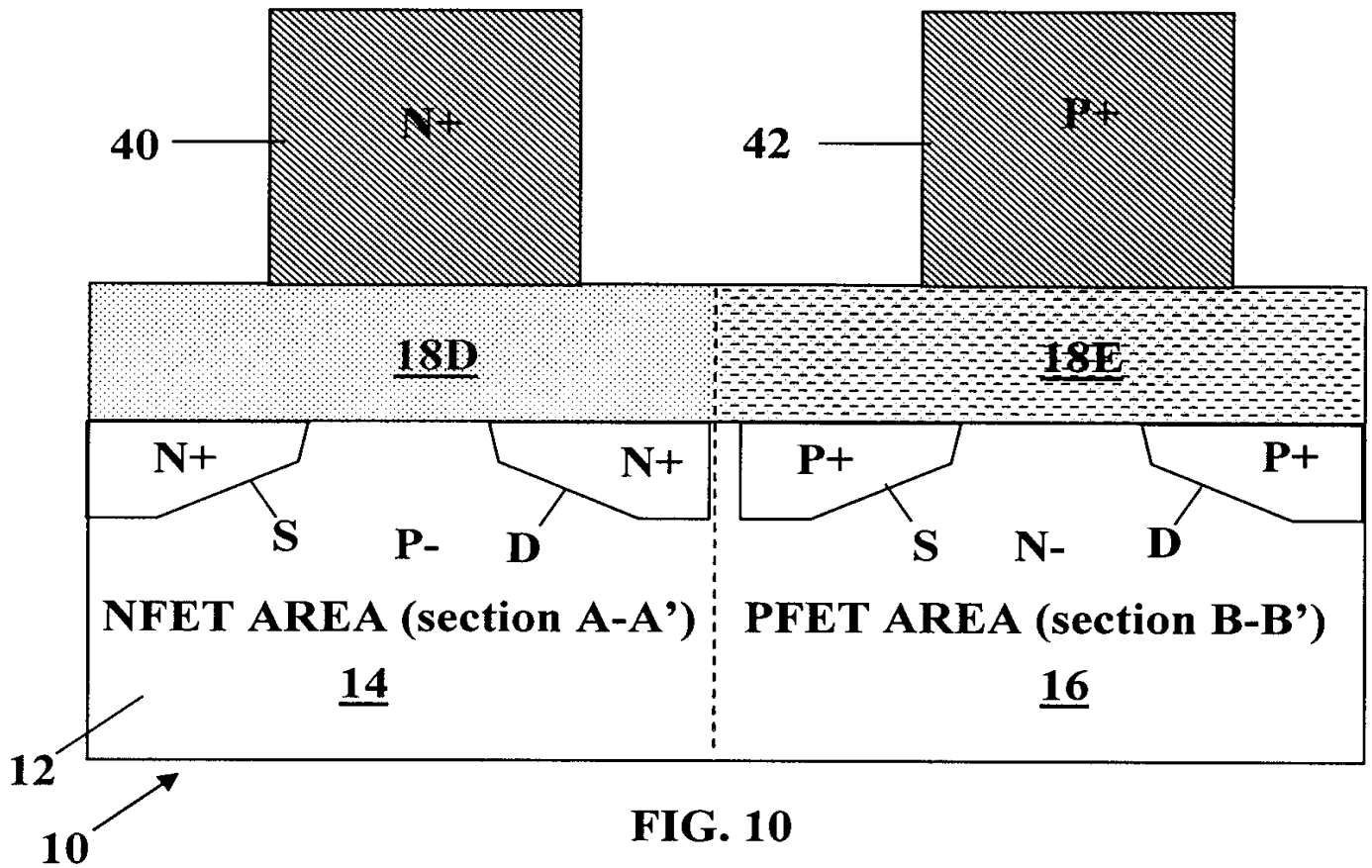
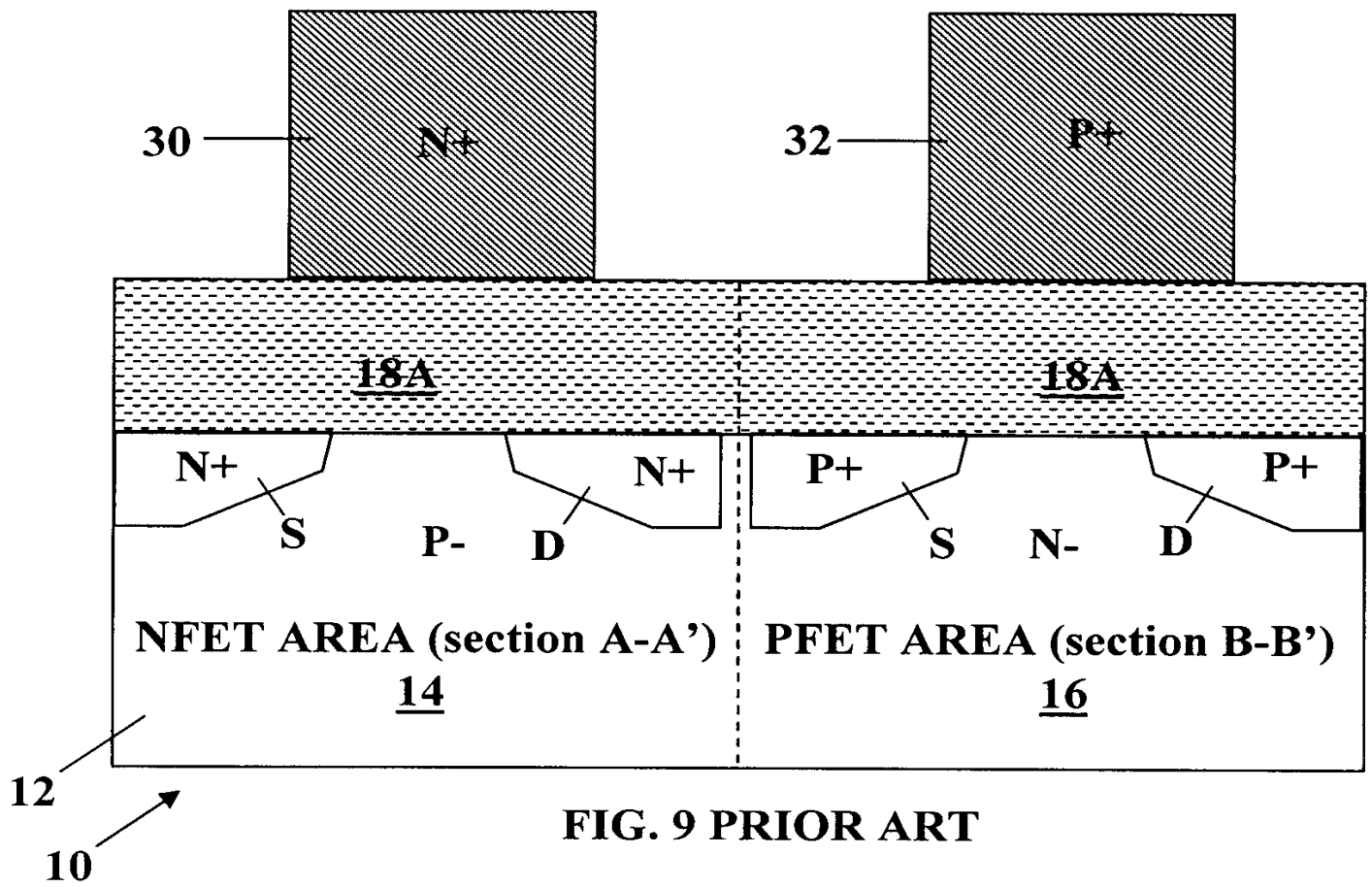


FIG. 8C

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	NITROGEN CONCENTRATION		GATE LEAKAGE		MOBILITY		PERFORMANCE
	PFET oxynitride Nitrogen dose (cm ⁻²)	NFET oxynitride Nitrogen dose (cm ⁻²)	PFET gate leakage	NFET gate leakage	PFET mobility	NFET mobility	
A	0E15	0E15	-	-	0	0	CMOS performance metric (NFET+PFET)
B	1E15	1E15	0	0	0	0	0
C	2E15	2E15	+	+	+	-	0
D	2E15	1E15	+	0	+	0	+

Key: - = poor; 0 = acceptable; + = improved;

FIG. 11